UCRL-JC-122281 Abs

Mapping Subsurface Contaminant Pathways

Bern J. Qualheim, Robert V. McPherrin, Michael Sick,
Lawrence Livermore National Laboratory

Lawrence Livermore National Laboratory (LLNL) is in the final stages of the Superfund decision making process for site remediation and restoration. The initial stages of mapping the lateral and vertical continuity of subsurface paleostream channels for the entire LLNL site using geologic descriptions from core samples, cuttings, and interpretations from geophysical logs is underway. A newly updated computer-aided design and drafting (CADD) program, SLICE, written at LLNL, is being used to fuse various data sets and create two and three-dimensional maps of subsurface sediments to meet the need for spatially detailed data. The user specifies a strike and dip of slices representing a chosen depositional gradient. Mapping of the channels can be made on each slice by distinguishing the fine and coarse grained sediments where the slice intersects each planar view of the well. The interpreted data are then used to generate scattered data representing the interpreted subsurface channel. The interpreted channels are gridded with the x, y, z and the coarse or fine values. By stacking together a series of these slices over a given depth interval we have built models of the channels over specific areas of the site. These channel reconstructions are used to site well locations, map contaminant transport, and aid in the visualization of the subsurface.

Work performed under the auspices of the U.S. Department of Energy by the Lawrence Livermore National Laboratory under Contract W-7405-Eng-48.